

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

In the matter of the petition of

**Boeing Commercial Airplane Group**

for an exemption from § 25.562(b)(2) of the  
Federal Aviation Regulations

**Regulatory Docket No. 28452**

**GRANT OF EXEMPTION**

By letter dated January 8, 1996, Mr. T.E. Hickcox, Manager, Certification, Certification Programs, B-T111, Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, WA, 98124-2207, petitioned for exemption from the floor warpage testing requirement of § 25.562(b)(2), as amended by Amendment 25-64, of the Federal Aviation Regulations (FAR), for flight deck seats on Boeing Model 737-600, -700, and -800 airplanes.

**Section of the FAR affected:**

Section 25.562(b)(2), as amended by Amendment 25-64, requires the floor tracks used to attach the seat to the floor to be misaligned with respect to the adjacent seat tracks by at least 10 degrees vertically (i.e., out of parallel), with one rolled 10 degrees. The misalignment is used during the forward loading dynamic test condition and applies to both crew and passenger seats.

**The petitioner's supportive information is as follows:**

"The Boeing Models 737-600, -700, and -800 are the next Boeing aircraft which will comply with FAR 25.562. Accordingly, there are provisions of FAR 25.562 which the 777-200 was not required to meet, specifically the floor warpage testing requirements."

"The 777-200 was exempt from this requirement based on the following justification.

"FAR 25.562 states that, 'where floor rails or floor fittings are used to attach the seating devices to the test fixture, the rails or fittings must be misaligned with respect to the adjacent set of rails or fittings by at least 10 degrees vertically (i.e., out of parallel) with one rolled 10 degrees.'

"The preamble to Amendment 25-64 states: 'Crash investigations have shown that localized cabin floor deformation can occur in survivable crashes. This has been confirmed by the controlled impact demonstration and drop tests involving transport category airplanes. The inability of some seats to accommodate such deformations, remain in place, and restrain the occupants can contribute significantly to [the] degree of injury during a crash. The simulated floor deformation used in the dynamic tests. . .will demonstrate the tolerance of the seat and its attachments to deformations that could occur in an actual crash.'

"The preamble also states the benefit of this amendment is believed to be that ' . . .some lives are expected to be saved that otherwise may not have been.'

"This test requirement makes no distinction between passenger and crew seats, while the evidence mentioned in the preamble is believed to be based on passenger seats only. There is evidence to suggest that floor warpage has not been a significant factor in flight deck seat failures during survivable crash conditions.

"The FAA acknowledged in the preamble to Amendment 25-64 the likelihood of seats designed to meet this amendment [costing] more to manufacture and therefore to purchase, as well as increasing the airplane operating cost due to a weight increase. In order to justify the increased costs, it must be expected that some lives will be saved that otherwise may not have been. This does not appear to be the case for flight deck seats. These increased costs will create an economic disadvantage for the 737-600, -700,-800 without a commensurate expectation of saving lives that otherwise may have been lost.

"Granting of this exemption is in the public interest because it will:

1. Not adversely affect flight safety;
2. Improve the efficiency of the Model 737-600,-700,-800;
3. Tend to reduce air transportation fares;
4. Improve the potential for sales to foreign operators, which in turn improves the U.S. balance of payments."

"Similarly, based on the above justification, and the precedent set on the 777-200, Boeing requests exemption for the Model 737-600,-700,-800 flight deck seats from the rail misalignment and roll test requirements."

A summary of the petitioner's January 8, 1996, request for exemption was published in the *Federal Register* on February 22, 1996 (61 FR 6884), and no comments were received.

**The Federal Aviation Administration's analysis/summary is as follows:**

The petitioner's request for relief from the requirement to misalign the seat tracks is limited to the Boeing Model 737-600/700/800 flight deck seats. These seats are individually mounted, single seats with both vertical and horizontal adjustments to accommodate the differences in the size of crew members. Crew seats are required to be fairly rigid in order to withstand the pilot reaction forces from the flight controls. While it is conceivable that too much flexibility in the seat mounting structure could interfere with the safe operation of the airplane, some flexibility in the seat attachment is considered necessary to conform to likely floor distortions during crash conditions.

The FAA has reviewed the arguments presented by the petitioner in support of the exemption and concludes that the service history of flight deck seats on larger airplanes supports the petitioner's request. Although some cockpit floor distortions have been observed after accidents, there has not been a problem with flight deck seat separations due to floor buckling on narrow body and larger airplanes which have a minimum of 40 inches of frangible structure between the flight deck floor and the lower fuselage contour. The FAA now considers that requiring testing of pilot seats with floor warpage cannot be justified on narrow body and larger airplanes. The FAA is currently developing a proposal to amend the regulations accordingly.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 USC 40113 and 44701, delegated to me by the Administrator (14 CFR 11.53), the Boeing Commercial Airplane Group is hereby granted an exemption from the floor warpage testing requirements of § 25.562(b)(2). The following limitations apply to this exemption:

1. This exemption is limited to the Boeing Model 737 family of airplanes and applies only to seats on the flight deck. Flight attendant or passenger seats are not exempted.

2. The flight deck seats are exempted from compliance with the 10 degrees of track misalignment required under § 25.562(b)(2). Compliance with all other requirements of § 25.562 is required.

Issued in Renton Washington, on April 12, 1996.

/s/ Stewart R. Miller  
Acting Manager, Transport Airplane Directorate  
Aircraft Certification Service, ANM-100